

U.S. Serial No. 10/002,576  
Reply to Office Action of: 05/25/2004  
Family Number: P2001J062

Page 4 of 5

Remarks

Applicants amended claim 1 to indicate that the pearlite structure is a corrosive protective one. As stated in paragraph [0013] when the carburization is conducted outside the 727°C to 900°C range any pearlite phase formed lacks continuity and fails to provide corrosion protection.

Claim 1 also was amended to indicate that the heating of the iron article to convert the ferritic structure to an austenitic structure is, of course, conducted in an appropriate atmosphere.

The Examiner rejected claims 1, 2, 7 and 10 under 35 USC 103(a) based on Ramanarayanan in view of Garg and Hemsath. Applicants respectfully request reconsideration and withdrawal of that rejection.

Ramanarayanan does not teach forming pearlite at 727°C to 900°C in a carburizing atmosphere. Instead, Ramanarayanan teaches heating a conventional ferritic-pearlitic steel containing at least 0.7 wt% carbon above 900°C and then at about 675°C where pearlitic transformation occurs (Col. 2, lines 55 to 60). Alternatively heating in a carburizing atmosphere at a temperature above 900°C is taught (Col. 3, lines 1 to 5).

Garg is cited as teaching carburizing steel at 750°C to 950°C. However, there is absolutely no motivation for using that temperature range in the process of Ramanarayanan because Ramanarayanan suggests that pearlite forms only at 675°C or above 900°C. Moreover, Garg does not suggest first heating an iron article containing less than 0.77 wt% carbon to the austenitic range before carburization.

Hemsath is cited as teaching a preheating zone prior to carburizing a metal. The function of the preheating is to remove oil from the metal not convert it to a

U.S. Serial No. 10/002,576  
Reply to Office Action of: 05/25/2004  
Family Number: P2001J062

Page 5 of 5

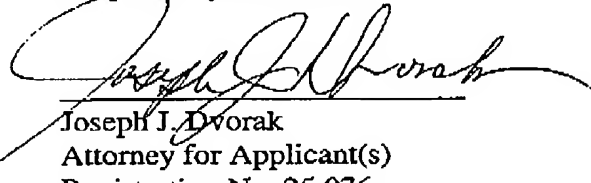
specific metallurgical phase. In the absence of oil there is not reason to preheat. Moreover, Hemsath teaches preheating on an oxidizing atmosphere which in the case of an iron article should result in the formation of magnetite which would suppress carbon diffusion. Thus preheating as per Hemsath would not result in applicants' process nor corrosion resistant pearlite structure.

Applicants submit the rejection should be withdrawn.

The rejection of claims 6 and 11 also should be withdrawn because the third reference in the string, Kerridge, does nothing to overcome the deficiencies of the primary references.

In view of the foregoing, applicants request prompt allowance of the instant application.

Respectfully submitted,



Joseph J. Dworak  
Attorney for Applicant(s)  
Registration No. 25,076  
Telephone Number: (908) 730-3641  
Facsimile Number: (908) 730-3649

☒ Pursuant to 37 CFR 1.34(a)

ExxonMobil Research and Engineering Company  
P. O. Box 900  
Annandale, New Jersey 08801-0900

JJD:jdw  
7/13/04